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NOTES ON THELESPERMA

BY S. F. BLAKE.

The genus *Thelesperma* includes about 10 species, ranging over the plains of western North America from South Dakota and Missouri to Texas, west to the Rocky Mountains, and south to northern Mexico. A single species, which appears to be identical with the commonest species of the western United States, occurs on the pampas of Argentina and Uruguay. The conspicuously whitish- or yellowish-margined inner phyllaries, connate into a cup for usually about half their length, render the genus one of the most readily recognized of the *Bidens* group. The disk corollas of some and perhaps all the species show a peculiarity that does not seem to have been described hitherto. They are more or less strongly zygomorphic in the manner of *Pectis*, the incisions separating one of the teeth (the outermost) being deeper than the others. The following notes are based on material in the U. S. National Herbarium and on a number of sheets from the Gray Herbarium kindly lent for study by Dr. B. L. Robinson.

***Thelesperma subaequale* Blake, sp. nov.**

Perennial; leaves once or twice ternatisect, the segments usually filiform; heads radiate; outer phyllaries narrowly subulate, 4-7 mm. long, about equaling the inner; achenes trigonous, wing-margined; pappus of 2 short stout teeth; teeth of disk corollas much shorter than throat.

Herbaceous perennial, 55-85 cm. high, glabrous throughout except for the slightly ciliolate petioles, glaucescent; stems about 2, remotely leafy, slightly branched above, bearing 2-7 heads; leaves opposite; lower leaves ternatisect, about 5.5 cm. long (including petiole, this about 2 cm. long), the terminal lobe about 3-parted, the segments narrowly linear or linear-filiform, acuminate, 0.8-1.3 mm. wide; middle stem leaves similar, pin-

nately 3- or 5-sect, the terminal and often the lateral lobes again 3-sect; upper leaves usually 3-sect, only those of peduncles and sometimes one of the uppermost pair at base of peduncles simple; heads 2-7, 2-3 cm. wide, on peduncles 9-15 cm. long; outer phyllaries 8, narrowly subulate, acuminate, herbaceous, 4-7 mm. long, from two-thirds as long as the inner to equaling them; inner phyllaries united for one-third to two-fifths their length, with broad whitish margins (these 0.5-1 mm. wide); rays 8, golden yellow, shallowly 3-lobed, the lamina broadly cuneate, about 12 mm. long, 7 mm. wide; disk flowers numerous, their corollas golden yellow or orange (when dried), sparsely pilose at base of throat, 4.2-5.2 mm. long (tube 1.5-2.2 mm., throat oblong-cylindric, 1.8-2.5 mm., teeth unequal, the 4 shorter ones deltoid or ovate-deltoid, acute, slightly hispidulous at apex, 0.6-0.8 mm. long, the fifth triangular-ovate, 1-1.2 mm. long); pales oblong, rounded, broadly scarious-margined, about 5 mm. long; achenes meniscoid, blackish at maturity, about 4 mm. long, 1-2 mm. wide, coarsely blunt-muricate on the rounded back, the lateral angles and the central face each with a broad blunt corky wing-like margin, the inner achenes narrower and with thinner wings; pappus of 2 stout, triangular, denticulate or sparsely retrorse-hispidulous teeth 0.2 mm. long or less; style tips broadened and hispid above, then subtruncate and abruptly terminated by subulate hispid appendages 0.4 mm. long.

NUEVO LEÓN: Limestone ledges of the Sierra Madre above Monterey, alt. 915 meters, 5 June 1906, *Pringle* 10192 (type no. 462236, U. S. Nat. Herb.; duplicate in Gray Herb.).

The type collection was distributed as *T. filifolium* Gray (= *T. trifidum* (Poir.) Britton), which belongs to another group of the genus characterized by having the teeth of the disk corollas longer than the throat. The relationship of the species is rather with *T. simplicifolium* A. Gray, which has normally several pairs of undivided upper leaves, much shorter outer phyllaries (less than half as long as the inner), and unwinged achenes.

***Thelesperma burridgeanum* (Regel) Blake.**

Cosmidium burridgeanum Hort.; Regel, Ind. Sem. Hort. Petrop. 1857: 40. 1858.

Cosmidium burridgeanum atropurpureum Van Houtte, Fl. Serres 13: 55. pl. 1321. 1860.

Thelesperma hybridum Voss in Vilmorin's Blumengärtnerei ed. 3.1: 484. fig. 1896.

Thelesperma hybridum f. *atropurpureum* Voss, l. c. 485. 1896.

The history of this species is of considerable interest. Well described by Regel in 1858 under the garden name *Cosmidium burridgeanum*, with the habitat "Texas ?", it seems not to have been mentioned again in botanical literature, aside from a horticultural note by Van Houtte, until Dr. Gray¹ in 1884 briefly disposed of it with the following remark: "COSMIDIUM BURRIDGEANUM of the gardens is a hybrid of *T. filifolium* and *Coreopsis tinctoria*, acquiring its brown-purple rays from the latter."

¹Syn. Fl. 12:301. 1884.

Since then the species has apparently disappeared from consideration as a native American plant, although it still figures in gardening literature. Voss, in the work cited above, describes it under the new name *Thelesperma hybridum* (citing *Cosmidium burridgeanum* "Hook." as a synonym), calls it a hybrid of *T. trifidum* and *Coreopsis tinctoria*, and gives a small figure representing well enough the habit of the plant. He describes the rays as "orange-gelb am Grunde braun-gefleckt," and mentions a much more beautiful "f. *atropurpureum*," in which the rays are dark purple with only a narrow golden margin. The plant figured by Van Houtte in 1860 as *Cosmidium burridgeanum atropurpureum* appears to have been slightly different from Voss's. The plant is also briefly described and figured in Bailey's Standard Cyclopaedia of Horticulture,¹ the description and figure being taken over from his Cyclopaedia of American Horticulture.²

To Miss Ellen D. Schulz of San Antonio, Texas, belongs the credit for the rediscovery of this plant in a wild state and the acquisition of material which has made it possible to establish its specific distinctness. Among some specimens sent to the U. S. National Herbarium by her in 1926 was a specimen of this species collected near Pleasanton, Atascosa County, Texas, in May, 1926. Later Miss Schulz sent more specimens collected in sandy loam 2 miles south of Pleasanton on 24 April 1927, with the information that the plant seemed to be confined to sandy regions and was not found in limestone areas (in which *Thelesperma trifidum* grows). Neither of the supposed parent species grew in the vicinity. Additional specimens were grown for the writer in the Department of Agriculture greenhouses from seed supplied by Miss Schulz. An earlier specimen collected by Miss Schulz at "San Antonio, July, 1921," has been found by the writer in the *Thelesperma trifidum* cover at the National Herbarium.

Although the species had been quite lost sight of as a wild plant and is almost unknown in herbaria³ (there is no specimen at the Gray Herbarium, and only those supplied by Miss Schulz in the National Herbarium), it is far from being an extinct species, and any one who cares to invest five cents in a packet of seeds of "Cosmidium" as sold by Northrup, King & Co. can easily obtain an abundance of specimens. On the cover of the packet from which my specimens were grown in 1928 three color forms are depicted—one with deep red rays, one with orange rays, and one with rays of a clear light yellow; in no case is a lighter margin shown. Specimens grown from these seeds were of two quite distinct color forms. In one the rays were deep velvety red-brown, with golden tip and very narrow golden margin (the golden color visible only on the upper surface); in the other the red-brown was replaced by deep orange tinged with brown. In both cases the disk corollas were of essentially the same color as the darker part of the rays. These two forms evidently correspond to the two forms first mentioned as represented in the chromo-like

¹Stand. Cycl. Hort., 6:3329. f. 3792. 1917.

²Cycl. Amer. Hort. 4:1792. f. 2495. 1902.

³In addition to the specimens sent by Miss Schulz and those grown from seed, I have examined only one specimen. This is a sheet in the Schultz Bipontinus Herbarium at Paris, sent by Alexander Braun from the Berlin Garden in 1857, and labeled "*Cosmidium Buridgianum*."

seedman's illustration, in which the golden margin of the rays was omitted; the third form there figured, with light yellow rays, is probably a pure invention of the artist. All the specimens grown from seed sent by Miss Schulz were of the dark reddish brown form, which is also the one described by Regel ("ligulis . . . atrofuscis, superne luteo-marginatis"). The lighter colored one is apparently the one taken by Voss as the typical form of his *T. hybridum*.

Thelesperma burridgeanum is clearly not a hybrid. All its characters, including the all-important ones of achenes and involucre, are constantly those of *Thelesperma*, and there is no suggestion in any of the specimens I have seen or grown of *Coreopsis tinctoria*. The purple-brown base of the rays, which is of course the source of the belief that *Coreopsis tinctoria* is one of its parents, is a feature that occurs in a number of species of *Coreopsis* and might be expected to recur in the related genus *Thelesperma*, although it is not known in any other species of that genus. The most distinctive feature of the species is the more or less densely hispidulous outer involucre, which is not found in either of the putative parents and is otherwise unknown in *Thelesperma*. The plant should be looked for by collectors in other parts of Texas. It may be recognized by the following short diagnosis:

Annual with the habit, foliage, involucre, flowers and fruit of *Thelesperma trifidum* (Poir.) Britton; outer phyllaries more or less densely hispidulous on back and margin; rays with purple-brown or orange-brown base and broad or narrow golden tip and margin. Definitely known in the wild state only from specimens collected in Bexar and Atascosa Counties, Texas, by Ellen D. Schulz.

THELESPERMA MEGAPOTAMICUM (Spreng.) Kuntze, Rev. Gen. Pl. 3²:182. 1898, as *Thelespermum*.

Bidens megapotamica Spreng. Syst. Veg. 3:454. 1826.

Tagetes flosculosa Spreng. Syst. Veg. 3:571. 1826.

Bidens gracilis Torr. Ann. Lyc. N. Y. 2:215. 1828.

Thelesperma scabiosoides Less. Linnaea 6:512. 1831.

Bidens paradoxa D. Don; Hook. & Arn. Journ. Bot. Hook. 3:319. 1841, as synonym.

Thelesperma gracile A. Gray, Journ. Bot. & Kew Gard. Misc. Hook. 1:252. 1849.

Bidens leyboldi Phil. Anal. Univ. Chil. 27:338. 1865, fide Baker.

Isostigma megapotamicum Sherff, Bot. Gaz. 81:252. 1926, as to name-bringing syn. only.

The North American *Thelesperma gracile* (Torr.) Gray, which ranges from Nebraska and Wyoming to Texas, Arizona, Nuevo León, and Coahuila, has been universally regarded as distinct from *T. megapotamicum*¹ of the pampas of Argentina and Uruguay. Apparently the only author who attempted to assign differential characters was Dr. Gray, who stated²

¹Usually known as *T. scabiosoides* Less.; see Sherff, Bot. Gaz. 76:91. 1923.

²Syn. Fl. 1²:301. 1884.

that *T. scabiosoides* "closely represents *T. gracile*, but has more filiform foliage and longer-awned pappus." Comparison of the half-dozen sheets of *T. megapotamicum* (*T. scabiosoides* Less.) in the National Herbarium, presumably comprising much more material than was accessible to Gray, with very abundant specimens of *T. gracile* shows that these characters do not hold, and the most careful comparison has failed to bring out any other differences. In habit, glaucescence, and foliage, in occasional ciliation of petioles, in involucre, flowers, and fruit the South American specimens can not be separated from the North American by any characters, and it seems necessary to unite them under the older name. *Thelesperma megapotamicum* appears to be unique in the details of its distribution among all North American Asteraceae, but is nearly matched by *Malacothrix coulteri* A. Gray, which occurs in southern California and southwestern Utah, and again in Argentina, without known intermediate stations. An interesting comparison of the floras of New Mexico and Argentina, with lists of identical and representative species, was published some years ago by Mr. Standley.¹

The types of *Bidens megapotamica* and *Tagetes flosculosa* Spreng., mounted on the same sheet in the Schultz Bipontinus Herbarium at Paris, were examined and photographed by the writer in 1925. The identity of *Tagetes flosculosa* does not seem to have been recorded previously. Dr. E. E. Sherff, who had not seen the true type of *Bidens megapotamica* Spreng., has recently based the name *Isostigma megapotamicum* on a supposedly authentic specimen of *B. megapotamica* in the Delessert Herbarium. My photograph of the real type of Sprengel, preserved in the Schultz Bipontinus Herbarium, shows that this course was erroneous.

Baker's² figure of the involucre is very poor, and his description of the flowers as "purpurascens," which would indicate a difference from the North American plant, is incorrect. The corollas are golden with brown or purple-brown nerves, as shown both by the specimens and by Kuntze's notation ("gelb") on one of his labels.

THELESPERMA SUBNUDUM A. Gray, Proc. Amer. Acad. 10:72. 1874.

In his treatment³ in 1900 of the Rocky Mountain species, which is copied in his "Flora of the Rocky Mountains and Adjacent Plains,"⁴ Dr. Rydberg has chosen for his primary character in dividing the genus the presence or absence of rays, and has placed *T. subnudum* in the radiate group. In the writer's key⁵ to the two species of *Thelesperma* occurring in Utah and Nevada, *T. subnudum* was also treated as a radiate species. The species was described by Gray as with "radiis nullis," and the type, *Parry 109* in the Gray Herbarium, from southern Utah, shows no sign of rays. In the original description Gray stated that *T. subnudum* "re-

¹P. C. Standley, "Comparative notes on the floras of New Mexico and Argentina," Journ. Washington Acad. Sci. 6:236-244. 1916.

²In Mart. Fl. Bras. 6³:249. pl. 73, f. I. 1884.

³Bull. Torrey Club 27:630-632. 1900.

⁴Page 936-7. 1917.

⁵In Tidestrom, Contr. U. S. Nat. Herb. 25:586. 1925.

sembles *T. subsimplicifolium* var. *scaposum*, which was also collected by Dr. Parry." The latter name was apparently never published accompanied by a description. The specimens (*Parry* 108, from southern Utah) on which it was based were referred to *T. subnudum* by Gray in revising his material for the "Synoptical Flora," and the description of *T. subnudum* was amplified¹ to include radiate forms. Parry's plant (no. 108) is radiate (rays about 7-10 mm. long), but in all other respects so similar to the type of *T. subnudum* that it seems correctly treated by Dr. Gray as a radiate form of that species. With the exception of the type, all the material of this species seen (from Utah, New Mexico, and Arizona) is radiate.

Thelesperma marginatum Rydb.² of Montana and adjacent Canada is very closely allied to *T. subnudum*. The stem usually bears 2 or 3 smaller, always discoid heads, and the bracts are less broadly white-margined than those of *T. subnudum*. Several collections from Montana have been examined, including two cited in the original description. Parry's Green River plant, referred to in the Synoptical Flora under *T. subnudum*, is *T. marginatum*.

THELESPERMA SIMPLICIFOLIUM A. Gray, Journ. Bot. & Kew Gard. Misc. Hook. 1:252. 1849, as *T. simplicifolia*.

Cosmidium simplicifolium A. Gray, Mem. Amer. Acad. II. 4:86. 1849.
Thelesperma subsimplicifolium A. Gray in Torr. Bot. U. S. & Mex. Bound. 90. 1859.

When redescribing this species in 1859, Dr. Gray altered the name to *T. subsimplicifolium* "to bring it nearer the fact," and has been almost universally followed in this respect by later writers.³ The rule of priority necessitates, of course, the use of the original name *simplicifolium*.

¹Syn. Fl. 12:302. 1884.

²Mem. N. Y. Bot. Gard. 1:421. 1900.

³In his "Catalogue of North American Plants" (1898, p. 148), A. A. Heller used the name *T. simplicifolium*, citing *T. subsimplicifolium* as a synonym.